

## Recommendations and Rationale

# Screening for Obesity in Adults

### U.S. Preventive Services Task Force (USPSTF)

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This statement summarizes the U.S. Preventive Services Task Force (USPSTF) recommendations on screening for obesity in adults based on the USPSTF's examination of evidence specific to obesity and overweight in adults. It updates the 1996 recommendations contained in the *Guide to Clinical Preventive Service*, Second Edition<sup>1</sup>.

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#### Summary of Recommendations

- **The USPSTF recommends that clinicians screen all adult patients for obesity and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.**

**Rating:** [B Recommendation](#).

*Rationale:* The USPSTF found good evidence that body mass index (BMI), calculated as weight in kilograms divided by height in meters squared, is reliable and valid for identifying adults at increased risk for mortality and morbidity due to overweight and obesity. There is fair to good evidence that high-intensity counseling—about diet, exercise, or both—together with behavioral interventions aimed at skill development, motivation, and support strategies produces modest, sustained weight loss (typically 3-5 kg for 1 year or more) in adults who are obese (as defined by BMI  $\geq 30$  kg/m<sup>2</sup>). Although the USPSTF did not find direct evidence that behavioral interventions lower mortality or morbidity from obesity, the USPSTF concluded that changes in intermediate outcomes, such as improved glucose metabolism, lipid levels, and blood pressure, from modest weight loss provide indirect evidence of health benefits. No evidence was found that addressed the harms of counseling and behavioral interventions. The USPSTF concluded that the benefits of screening and behavioral interventions outweigh potential harms.

- **The USPSTF concludes that the evidence is insufficient to recommend for or against the use of moderate- or low-intensity counseling together with behavioral interventions to promote sustained weight loss in obese adults.**

**Rating:** [I Recommendation](#).

*Rationale:* The USPSTF found limited evidence to determine whether moderate- or low-intensity counseling with behavioral interventions produces sustained weight loss in obese (as defined by BMI  $\geq 30$  kg/m<sup>2</sup>) adults. The relevant studies were of fair to good quality but showed mixed results. In addition, studies were limited by small sample sizes, high drop-out rates, potential for selection bias, and reporting the average weight change instead of the frequency of response to the intervention. As a result, the USPSTF could not determine the balance of benefits and potential harms of these types of interventions.

- **The USPSTF concludes that the evidence is insufficient to recommend for or**

**against the use of counseling of any intensity and behavioral interventions to promote sustained weight loss in overweight adults.**

**Rating:** [I Recommendation](#).

*Rationale:* The USPSTF found limited data that addressed the efficacy of counseling-based interventions in overweight adults (as defined by BMI from 25-29.9 kg/m<sup>2</sup>). As a result, the USPSTF could not determine the balance of benefits and potential harms of

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### Task Force Ratings

Strength of Recommendations and Quality of Evidence

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## Clinical Considerations

- A number of techniques, such as bioelectrical impedance, dual-energy X-ray absorptiometry, and total body water can measure body fat, but it is impractical to use them routinely. Body Mass Index (BMI), which is simply weight adjusted for height, is a more practical and widely-used method to screen for obesity. Increased BMI is associated with an increase in adverse health effects. Central adiposity increases the risk for cardiovascular and other diseases independent of obesity. Clinicians may use the waist circumference as a measure of central adiposity. Men with waist circumferences greater than 102 cm (> 40 inches) and women with waist circumferences greater than 88 cm (> 35 inches) are at increased risk for cardiovascular disease. The waist circumference thresholds are not reliable for patients with a BMI greater than 35.
- Expert committees have issued guidelines defining overweight and obesity based on BMI. Persons with a BMI between 25 and 29.9 are overweight and those with a BMI of 30 and above are obese. There are 3 classes of obesity: class I (BMI 30-34.9), class II (BMI 35-39.9), and class III (BMI 40 and above). BMI is calculated either as weight in pounds divided by height

in inches squared multiplied by 703, or as weight in kilograms divided by height in meters squared. The National Institutes of Health (NIH) provides a BMI calculator at [www.nhlbisupport.com/bmi/](http://www.nhlbisupport.com/bmi/) and a table at [www.nhlbi.nih.gov/guidelines/obesity/bmi\\_tbl.htm](http://www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm).

- The most effective interventions combine nutrition education and diet and exercise counseling with behavioral strategies to help patients acquire the skills and supports needed to change eating patterns and to become physically active. The 5-A framework (Assess, Advise, Agree, Assist, and Arrange) has been used in behavioral counseling interventions such as smoking cessation and may be a useful tool to help clinicians guide interventions for weight loss (go to "[Effectiveness of Interventions on Weight Loss](#)"). Initial interventions paired with maintenance interventions help ensure that weight loss will be sustained over time.
- It is advisable to refer obese patients to programs that offer intensive counseling and behavioral interventions for optimal weight loss. The USPSTF defined intensity of counseling by the frequency of the intervention. A high-intensity intervention is more than 1 person-to-person (individual or group) session per month for at least the first 3 months of the intervention. A medium-intensity intervention is a monthly intervention, and anything less frequent is a low-intensity intervention. There are limited data on the best place for these interventions to occur and on the composition of the multidisciplinary team that should deliver high-intensity interventions.
- The USPSTF concluded that the evidence on the effectiveness of interventions with obese people may not be generalizable to adults who are overweight but not obese. The evidence for the effectiveness of interventions for weight loss among overweight adults, compared with obese adults, is limited.
- Orlistat and sibutramine, approved for weight loss by the Food and Drug Administration, can produce modest weight loss (2.6-4.8 kg) that can be sustained for at least 2 years if the medication is continued. The adverse effects of orlistat include fecal urgency, oily spotting, and flatulence; the adverse effects of sibutramine include an increase in blood pressure and heart rate. There are no data on the long-term (longer than 2 years) benefits or adverse effects of these drugs. Experts recommend that pharmacological treatment of obesity be used only as part of a program that also includes lifestyle modification interventions, such as intensive diet and/or exercise counseling and behavioral interventions.
- There is fair to good evidence to suggest that surgical interventions such as gastric bypass, vertical banded gastroplasty, and adjustable gastric banding can produce substantial weight loss (28 to > 40 kg) in patients with class III obesity. Clinical guidelines developed by the National Heart, Lung, and Blood Institute (NHLBI) Expert Panel on the identification, evaluation, and treatment of overweight and obesity in adults recommend that these procedures be reserved for patients with class III obesity and for patients with class II obesity who have at least 1 other obesity-related

- illness. The postoperative mortality rate for these procedures is 0.2 percent. Other complications include wound infection, re-operation, vitamin deficiency, diarrhea, and hemorrhage. Re-operation may be necessary in up to 25 percent of patients. Patients should receive a psychological evaluation prior to undergoing these procedures. The long-term health effects of surgery for obesity are not well characterized.
- The data supporting the effectiveness of interventions to promote weight loss are derived mostly from women, especially white women. The effectiveness of the interventions is less well established in other populations, including the elderly. The USPSTF believes that, although the data are limited, these interventions may be used with obese men, physiologically mature older adolescents, and diverse populations, taking into account cultural and other individual factors.

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## Scientific Evidence

### Epidemiology and Clinical Consequences

The importance of obesity as a health problem in the United States is increasingly apparent. Defined as a BMI of equal to or greater than 30, obesity in the United States has increased from a prevalence of 13 percent to 27 percent in the adult population over the last 40 years, and the prevalence of overweight rose from 31 percent to 34 percent.<sup>4,5</sup> Obesity is more common in women and overweight is more common in men; obesity is especially common in African Americans, Native Americans, Native Hawaiians, and some Hispanic populations.<sup>5</sup>

Obesity and overweight are associated with an increased risk for coronary heart disease (CHD), hypertension, and stroke; type 2 diabetes; several types of cancer, including those of the colon, kidney, gallbladder, breast, and endometrium; sleep apnea; gall bladder disease; and certain musculoskeletal disorders, such as knee osteoarthritis ([www.surgeongeneral.gov/topics/obesity/calltoaction/1\\_2.htm](http://www.surgeongeneral.gov/topics/obesity/calltoaction/1_2.htm)). In addition, obesity is associated with decreased quality of life, including diminished mobility and social stigmatization.<sup>6</sup> The association between obesity and health outcomes may vary by ethnic group, but the USPSTF found the evidence insufficient to draw conclusions. Recent analyses estimate that direct costs of obesity account for 5.7 percent of total U.S. health expenditures.<sup>7</sup>

### Accuracy and Reliability of Screening Test

The BMI, calculated as weight in kilograms divided by height in meters, squared, is the measure used to define obesity and is also the most commonly used test to screen for obesity. Thus, the USPSTF specifically defined screening as the

measurement of BMI by the clinician with the purpose of assessing and addressing body weight in the clinical setting.

The BMI is easy to measure, highly reliable, and highly correlated with percentage of body fat and body fat mass ( $R^2 = 0.95$  in men;  $R^2 = 0.98$  in women).<sup>1,8,9</sup> However, in the elderly, who generally have a higher proportion of internal fat than younger people, BMI correlates least strongly with percentage of body fat.<sup>9</sup> Nevertheless, estimates of body fat percentages measured using BMI in the elderly have shown error rates comparable to those measured using BMI in younger adults (approximately 4 percent).<sup>10</sup> The clinical relevance, or external validity, of BMI measurement is clear from the established prospective links between BMI and multiple adverse health outcomes.<sup>11-18</sup>

The BMI is age-dependent and does not account for body fat distribution, an independent risk factor for health outcomes.<sup>12,19</sup> Also, the BMI does not take into account "fitness" (the weight of muscle versus the weight of fat in a heavily muscled individual), which is inversely associated with mortality independent of the BMI.<sup>12</sup> Central, or abdominal, adiposity, usually measured by the waist-hip ratio or waist circumference, has been most closely linked with cardiovascular risk in several prospective studies. In the Health Professional Follow-up Study, overall and cardiovascular mortality in men increased linearly with baseline BMI in younger men (those initially younger than 65) and had no relationship with BMI in older men (those initially at least 65); by contrast, waist circumference predicted risk for overall and cardiovascular mortality among the younger men, and predicted risk for cardiovascular death among the older men.<sup>20</sup> In a cohort of women in Iowa, the waist-hip ratio was a better predictor of total or CHD mortality than BMI.<sup>21</sup> Even women in the lowest BMI quintile had a markedly increased risk for diabetes if they also had a high waist-hip ratio.<sup>21</sup>

The BMI has been linked with a wide range of health outcomes, and entry criteria for most studies are based on BMI. Obesity treatment trials typically reported change either in weight (directly proportional to BMI) or BMI. Consequently, the USPSTF focused its analysis on use of the BMI.

## **Effectiveness of Detection and Intervention**

Although the diagnosis of obesity is at times obvious, clinicians often do not address the issue with their obese patients. In a large national study of adults with a BMI of 30 or greater, for example, only 42 percent reported that their health care professional advised them to lose weight.<sup>22</sup>

The USPSTF found no randomized controlled trials (RCTs) evaluating the efficacy of obesity screening programs in improving the clinical outcomes of mortality, morbidity, mental health, or functioning. Thus, the Task Force examined indirect evidence regarding the component questions of the effectiveness of interventions to lose weight, and the effects of weight loss on intermediate and clinical outcomes.

## **The Effectiveness of Interventions on Weight Loss**

The USPSTF examined 3 categories of weight loss counseling and behavioral interventions using lifestyle change, pharmacotherapy, and surgery. The USPSTF examined published systematic reviews as well as the primary research. Counseling interventions include a variety of approaches aimed at promoting change in diet and/or physical activity. Behavioral interventions include strategies that assist patients to acquire skills, improve motivation, and develop supports. The 5-A framework (Assess, Advise, Agree, Assist, and Arrange) has been used in behavioral counseling interventions and may be a useful tool to help clinicians guide interventions for weight loss.<sup>23</sup>

Counseling and behavioral interventions showed small to moderate degrees of weight loss sustained over at least 1 year. Counseling interventions led to weight changes in the range of 1 kg to -6 kg<sup>24,25</sup> or from -4 to -8 percent of body weight.<sup>26</sup> Although several trials were of good quality, most were judged only fair, with limitations such as small sample size, potential selection bias (trials often enrolled volunteers), and high drop-out rates. Studies tended to report mean group weight change and not frequency of response to the interventions. Trials of higher-intensity interventions (defined by the USPSTF as person-to-person meetings more than once a month for at least the first 3 months), and combinations of interventions appeared to promote greater weight loss than trials of lower-intensity interventions.

Among 11 RCTs evaluating high-intensity interventions, only 3 explicitly stated the location of the interventions: 2 were conducted in large research clinics and 1 was conducted in a primary physician's office.<sup>3</sup> The 11 RCTs used a variety of health professionals to deliver the interventions, including physicians, psychologists, dietitians, behavioral therapists, exercise instructors, and multidisciplinary teams.<sup>3</sup> Four RCTs using high-intensity interventions achieved significant reductions in weight or prevention of weight gain in the treatment groups (average loss: 2.7-5.5 kg at 12 months to more than 2 years of followup).<sup>27-30</sup> Trials with followup beyond 1 year tended to show a loss of effect; but several studies showed a modest weight loss maintained at 24 to 36 months. Weight loss methods may need to be paired with longer-term maintenance interventions for sustained improvement.

The USPSTF found the evidence supporting pharmacotherapy of mostly fair quality. Data for sibutramine and orlistat suggest that these drugs have modest but potentially sustained effects.<sup>3,31</sup> Although average weight loss was consistently modest (weight reduction of 3-5 kg), the percentage of patients achieving clinically significant weight loss (5-10 percent of body weight) was sometimes substantial.<sup>3</sup> Weight maintenance trials suggested that prolonged pharmacotherapy confers some benefit but that its discontinuation may lead to rapid weight regain. There are limited data on combined behavioral and pharmacological interventions. One fair-quality trial showed that a combination of intensive behavioral therapy and sibutramine led to greater weight loss (mean of 7.3 kg over 1 year) compared with sibutramine alone, and that a combination of intensive behavioral therapy and diet control with sibutramine led to even greater weight loss (mean of 12.8 kg over 1 year) compared with sibutramine alone.<sup>32</sup>



Obesity surgery (e.g., gastric banding, vertical banded gastroplasty, and gastric bypass) has been performed for only a select group of patients; the NHLBI clinical guide for identification, evaluation, and treatment of overweight and obesity in adults recommends surgical intervention only for those people with a BMI > 40 or a BMI of 35 to 40 with at least 1 obesity-related comorbidity.<sup>26</sup> National data indicate that 5 to 6 percent of the general population has a BMI in this range.<sup>33</sup> Surgical data are typically limited by the lack of placebo-controlled RCTs; the internal validity of the controlled trials is of only "fair" quality. Nonetheless, the degree of weight reduction obtained with surgical intervention is consistently dramatic (typically 20 kg or more).<sup>3,24,25</sup> Based on a large literature of controlled and uncontrolled cohort studies, the weight loss may be prolonged and can be achieved in patients who have multiple comorbidities.<sup>3,24,25</sup>

## **The Effectiveness of Weight Loss on Intermediate Outcomes**

Weight reduction of 5 to 7 percent body weight is associated with lower incidence of diabetes, reduced blood pressure, and improved dyslipidemia.<sup>26,30</sup> Greater weight loss has been linked with more dramatic improvements in glycemic control and lipids in limited surgical (non-RCT) outcomes data. Surgical cohort studies suggest that large amounts of weight loss may be linked with dramatic improvements in glucose metabolism.<sup>34,35</sup> Surgically treated patients are more likely to have resolution of diabetes, hypertension, and certain dyslipidemias than patients who do not undergo surgery.<sup>34-36</sup>

## **The Effectiveness of Weight Loss on Clinical Outcomes**

The USPSTF searched for evidence that weight loss can affect mortality, morbidity, mental health, and daily functioning, but found the evidence severely limited. There are no strong data to demonstrate that weight loss reduces mortality. Moderate intentional weight loss (5-10 percent of initial body weight) has been shown to reduce the severity of comorbidities associated with obesity, and limited observational data suggest that intentional weight loss in the obese can lead to reduced mortality.<sup>26,37</sup> Two recent trials provide strong evidence that behaviorally mediated weight loss can prevent diabetes.<sup>29,30</sup> One trial evaluating 2 types of behavioral therapy showed borderline improved self-esteem in both treatment groups.<sup>38</sup> The USPSTF found mixed evidence of improvements of secondary health outcomes among the short-term pharmacotherapy trials.

## **Potential Harms of Screening and Treatment**

The USPTF did not find studies evaluating the harms of screening, counseling, or behavioral interventions. Nonetheless, a potential risk does exist, particularly as the stigma of obesity is well established. Possible labeling effects of diagnosis may occur. The National Task Force on the Prevention and Treatment of Obesity found that dieting does not lead to problems in psychological functioning or eating disorders in overweight or obese adults.<sup>39</sup> There are limited and conflicting

data on the potential harms of weight cycling (cycles of weight loss followed by weight regain). There may be harms related to pharmacological and surgical interventions. Common adverse effects occur more frequently with sibutramine (especially an increase in blood pressure and heart rate), but no serious adverse events were reported.<sup>31</sup> Orlistat causes gastrointestinal fecal urgency, flatulence, and oily spotting in 22 to 27 percent of people taking the drug.<sup>31</sup> The long-term safety (> 2 years) of sibutramine and orlistat is unknown. Surgical procedures are followed by procedure-specific complications (e.g., wound infection, staple failure, and leakage), but are rarely fatal (mortality was less than 1 percent of patients in pooled samples).<sup>3</sup> The jejunio-ileal bypass is no longer recommended because of excessive malabsorption.<sup>25</sup> Re-operation is necessary within 5 years in up to 25 percent of patients, and patients require long-term followup and multivitamin supplementation.<sup>3</sup>

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## Recommendations of Others

The Canadian Task Force on Preventive Health Care finds insufficient evidence to recommend for or against BMI measurement in the periodic health examination of the general population and found insufficient evidence to recommend for or against community-based obesity prevention programs.<sup>24</sup> The American Academy of Family Physicians<sup>40</sup> and the American College of Obstetricians and Gynecologists recommend periodic measurements of height and weight. NIH has a 2-step guideline of assessment and treatment management of overweight and obese individuals.<sup>26</sup> The American College of Preventive Medicine recommends periodic BMI measurement of all adults and diet and exercise counseling of all adults (irrespective of BMI) and endorses NIH management guidelines.<sup>41</sup> The American Diabetes Association has published a position statement that recommends the use of intensive lifestyle modification programs along with standard weight loss strategies for long-term weight loss and maintenance.<sup>42</sup>

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## Available Products

This statement summarizes the U.S. Preventive Services Task Force (USPSTF) recommendations on screening for obesity in adults based on the USPSTF's examination of evidence specific to obesity and overweight in adults. It updates the 1996 recommendations contained in the *Guide to Clinical Preventive Service*, Second Edition.<sup>1</sup>

The complete information on which this statement is based, including evidence tables and references, is available in the summary of the evidence<sup>2</sup> and in the systematic evidence review, "Screening and Interventions for Overweight and Obesity in Adults."<sup>3</sup> The USPSTF recommendations, the accompanying summary article, and the complete systematic evidence review are available through the USPSTF Web site ([www.preventiveservices.ahrq.gov](http://www.preventiveservices.ahrq.gov)).

The USPSTF recommendations are independent of the U.S. Government. They do not represent the views of the Agency for Healthcare Research and Quality (AHRQ), the U.S. Department of Health and Human Services, or the U.S. Public Health Service.

The summary of the evidence and the recommendation statement are also available in print by subscription to the *Guide to Clinical Preventive Services, Third Edition: Periodic Updates*. Select for order form: [PDF Version](#) (57 KB), [Text Version](#). The cost of a subscription is \$60 and can be ordered through the AHRQ Publications Clearinghouse (call 1-800-358-9295 or E-mail [ahrqpubs@ahrq.gov](mailto:ahrqpubs@ahrq.gov)).

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